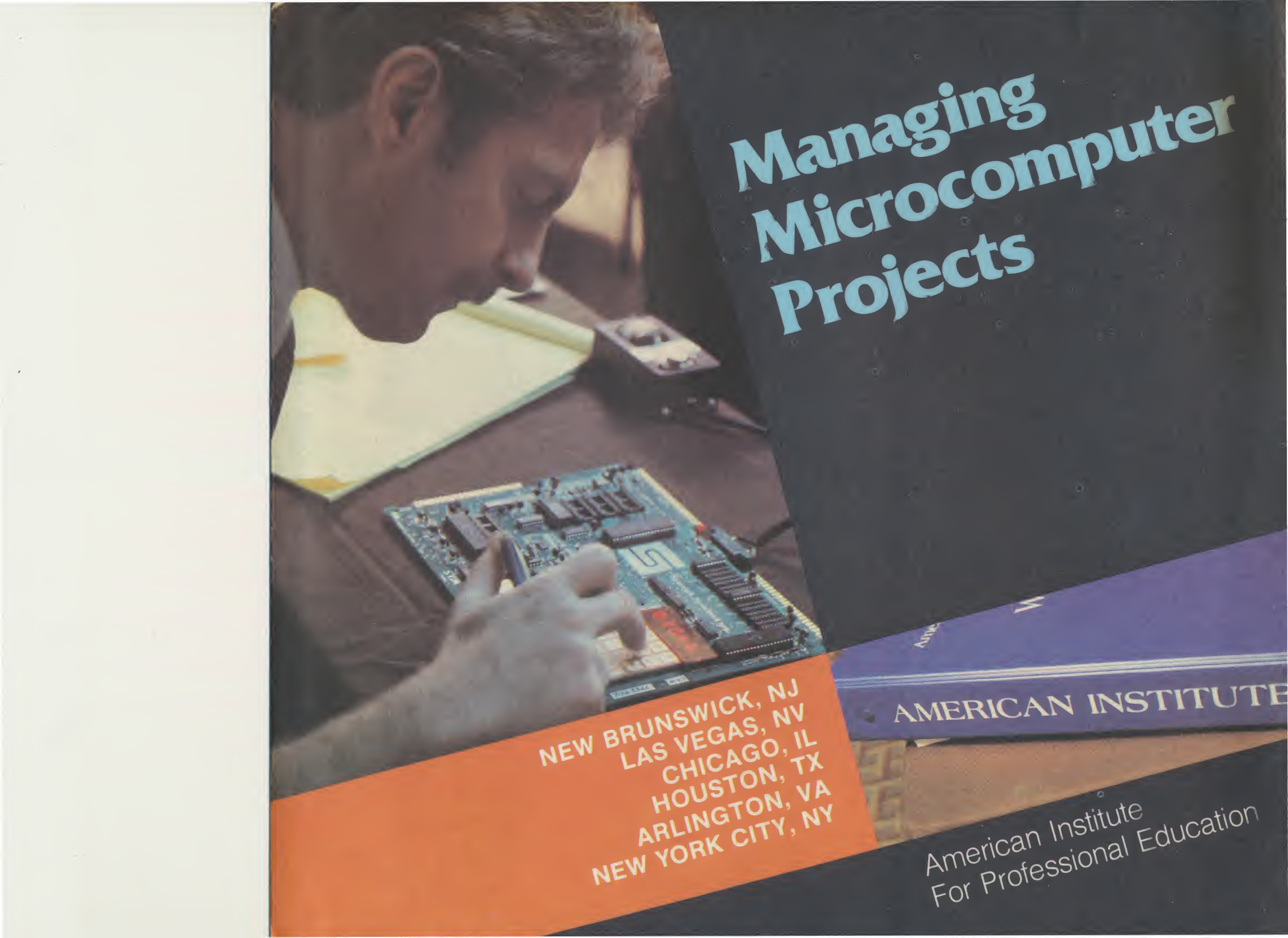


A photograph of a man with dark hair, wearing a dark shirt, leaning over a desk. He is using a pair of wire cutters to work on a green printed circuit board (PCB) populated with various electronic components, including integrated circuits and resistors. On the desk next to the board is a yellow notepad and a digital multimeter. The background is slightly blurred, showing a typical office or workshop environment.

Managing Microcomputer Projects

NEW BRUNSWICK, NJ
LAS VEGAS, NV
CHICAGO, IL
HOUSTON, TX
ARLINGTON, VA
NEW YORK CITY, NY

AMERICAN INSTITUTE

American Institute
For Professional Education

Managing Micro- computer Projects

SEMINAR DESCRIPTION

The seminar-briefing program is designed to be a fast-moving learning experience for busy managers who are faced with decisions related to use of microcomputer devices in their company's product line or authorization of purchase of microcomputer based production equipment.

The program starts with a terminology update, introduction to fundamental microprocessor functions and first-hand experiences with microcomputer operation. Using the SYM-1 single board computer the participant will gain knowledge of the capacity of microprocessors.

Following the familiarization with microcomputer families and the parts available, the participant will be briefed on the design process, programming, bus structures and available busses, interfacing parts and techniques, applications, and distributed processing, including equipment available including microprocessors (8080, 8085, 6800, 6802, 6809, 6502, Z80, 8060, 9900, 8086, 68000, Z8000, etc.), single chip microcomputers (8048, 8748, 6801, 3870, 6500/1, Z8, 9940, etc.), single board microcomputer systems and their support boards such as memory, I/O, interface, A/D, D/A, and disk controllers. Development systems will be introduced and their role in the design process analyzed.

Special attention is given to applications areas that have proven to be particular targets for microcomputer designs. Some of these areas are process control, consumer products, data acquisition, peripheral controllers, terminals, machine controls, communications controllers, instruments, automotive and environmental controls.

Using his own microcomputer board (SYM-1), the manager tests his new knowledge via special experiments designed to demonstrate microcomputer capabilities.

This workshop/seminar will help the manager make good decisions with respect to microcomputer usage.

COURSE OBJECTIVES

- Learn how the microcomputer functions and what tasks it is capable of performing.
- Learn about the process necessary to design and develop a microprocessor/computer based product.

- Explore potential applications for microcomputers, what documentation is needed and the unique design problems related to microprocessor based projects.
- Overview the potential impact of microsystems on products, marketing, and manufacturing.
- Overview the procedure used in managing a microprocessor/microcomputer based design project.

WHO SHOULD ATTEND

Executives, managers of technical departments in industries, sales managers, production managers, and other management personnel who might be involved in making decisions about where and when microcomputer devices would be used. The material is designed and presented for management personnel and presumes no previous background or specialized knowledge of digital or computer devices. Participants should have a basic science and math background in order to facilitate assimilation of technical information.

For more information about registration, please contact the Registrar, at 201-377-7400.

SYM-1 FEATURES

- 4096 bytes of ROM
- 1152 bytes of RAM expandable to 4224 bytes of RAM
- 5 Programmable Interrupts expandable to 7
- Monitor and I/O Software
- Operating Program
- 28 Double Functions
- 24 Special Functions
- TTY and CRT interface
- 6 Digit easy to read display
- 13 Addressing modes
- Multiple level interrupt
- Memory capacity
- Operates on 5V
- 51 I/O Lines

COURSE

Introduction
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OUTLINE

FIRST DAY

n
Overview of Microcomputer
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ogy, Abbreviations and
Words
Technology
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Computer Fundamentals

System Architecture
Busses — Purpose and Function
The Microprocessor — MPU/CPU
Memory — RAM and ROM
Input/Output — I/O Ports
6. Instructions
7. Addressing

Setting and Operating Your Own Microcomputer Demonstration/Experiment — The Microcomputer as a Controller Microprocessor Programming Concepts

1. Instruction Set and Instruction Grouping
 2. Addressing Modes
 3. Programming Methods
 4. Program Flow Diagrams
 5. Encoding a Program
 6. Debugging a Program
 7. Testing a Program
 8. Documenting Programs
- ### Interfacing to the Outside World
1. Setup and Control of Input/Output (I/O) Ports
 2. Mapping I/O Into Memory
 3. Serial and Parallel I/O
 4. Programming I/O
 5. Peripheral Chips

6. Other Functions — Timing
 7. Interrupts
 8. Buffering and Signal Conditioning
 9. Analog to Digital and Digital to Analog
- ### Demonstration/Experiment — Using the Microcomputer To Do Multiple Tasks

Reading Assignments Discussion

SECOND DAY

Common Microprocessor Families — MPU's and Support Chips

1. Intel 8080, 8085 and 8086
2. Motorola 6800, 6802, 6809 and 68000
3. Texas Instruments TMS 1000 and TMS 9900
4. MOS Technology 6502
5. Zilog Z80 and Z8000
6. Fairchild, Mostek, National and others

Microcomputers on a Chip — Single Chip Systems

1. Intel 8048 and 8748
2. Motorola 6801
3. Mostek 3870
4. Texas Instrument 9940
5. Zilog Z8

Microprocessor Based Board Level Systems — Single Board Systems

1. Intel SBC Systems
2. Motorola Micromodule Systems
3. Texas Instruments TM 990 Module System
4. National Series 80 Microcomputer System
5. Zilog Z80 Microcomputer Board Series

Microcomputer Systems Busses

1. Systems Busses — Purpose and Function
2. Multibus
3. Exorciser Bus
4. STD Bus
5. S-100 (Standard)
6. Other Busses — IEEE-488 and EIA RS-232

Documentation — Sources and Usage Development Systems

1. Purpose and Function
2. Hardware
3. Software
4. Emulation
5. Cost and Savings

Peripherals

1. Video Displays
2. Storage — Disk and Tape
3. Hard Copy — Printers

Operating Systems Project Planning

1. Project Selection
2. Selecting Design Group

3. State Objectives
4. Establish Test Criteria
5. Design Interface
6. Computer Design or Assembly
7. Design Software
8. Integrate and Test

Applications

1. Process Control
2. Data Acquisition
3. Point of Sale Terminals
4. Consumer Products
5. Automotive
6. Instrumentation
7. Communications
8. Environmental Control

The Future Microcomputer Systems Discussion

FACULTY

Dr. A.O. Brown III is an experienced consultant/educator in the field of microelectronics. His work in the United States, Canada, Australia, Europe, and South America has brought him recognition for his contributions in the areas of process instrumentation, electronic control systems, and application design. He is currently presenting seminars on a national and international basis, as well as heading the electronics department at Pittsburg State University, Pittsburg, Kansas. For over twenty years, Dr. Brown has served such companies as Boeing and Mobil Oil, as well as consulting for industry and education.



Session Dates and Locations

NEW BRUNSWICK, NJ-July 7-8, 1981

Somerset Marriott
110 Davidson Ave.
Somerset, NJ 08873
(201) 560-0500

LAS VEGAS, NV-July 20-21, 1981

Frontier Hotel
3120 Las Vegas Blvd. South
Las Vegas, NV 89109
(702) 734-0110

CHICAGO, IL-August 3-4, 1981

Sheraton O'Hare
6810 N. Mannheim Rd.
Rosemont, IL 60018
(312) 297-1234

HOUSTON, TX-July 13-14, 1981

Holiday Inn-Airport
3702 North Belt East
Houston, TX 77025
(713) 449-2311

ARLINGTON, VA-July 27-28, 1981

Stouffers National Center Hotel
399 Jefferson Davis Highway
Arlington, VA 22202
(703) 979-6800

NEW YORK CITY, NY-August 10-11, 1981

Halloran House
525 Lexington Ave.
New York, NY 10017
(212) 755-4000

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Managing Microcomputer Projects

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REGISTRATION INFORMATION

COURSE FEES: The \$740 registration fee includes the seminar, the **SYM-1** Microcomputer, programming manual, user's manual, hardware manual, and course notebook.

DISCOUNT SCHEDULE: Three to five registrations made concurrently from the same firm are entitled to a 10% discount. Six or more registrations are entitled to a 15% discount.

REGISTRATION: Attendance level is limited and sessions tend to fill up well in advance of workshop dates. To register, mail the registration form or phone the Registrar, at 201-377-7400, 9 AM to 5 PM Eastern Time.

CANCELLATIONS: The registration fee is fully refundable up to three business days prior to the starting date of the seminar. A charge of 50% to cover incurred expenses will be assessed for any cancellation after that date. Transfers and substitutions may be made at no additional charge, providing substituted session is attended.

HOTEL ACCOMMODATIONS: Contact the hotel directly to reserve a room. A block of rooms will be held at the hotels listed above until two weeks prior to the seminar. When making your reservation, please indicate that you are attending an American Institute seminar.

COURSE SCHEDULE: Classes are held from 9:00 A.M. to 5:00 P.M. each day. No evening sessions are scheduled. Participants are given an overnight assignment requiring one hour of preparation time.

GUARANTEE: All participants will benefit from this unique seminar/workshop. The American Institute for Professional Education believes that **Managing Microcomputer Projects** offers the best possible training available in this field. If, at any time during the course, the participant notifies the instructor of his/her desire to withdraw, he/she may leave and receive a refund.

1.5 CEU'S AWARDED: The participants who successfully complete the course are awarded 1.5 Continuing Education Units. A certificate will be awarded upon request.

As the national standard for the recognition of non-university professional education, the CEU has been adopted by the extension divisions of over 600 colleges, by numerous professional associations, and by other specialized educational groups. A permanent record of CEU awards is maintained by The Institute.

ON-SITE TRAINING SESSIONS: For further information about sponsoring this workshop for groups of 15 to 30 professionals within your organization, please contact the Director of On-Site Programs, Carnegie Press, 201-822-1084.

ABOUT THE INSTITUTE: The American Institute for Professional Education was founded in 1972. It is a non-profit organization serving the educational needs of business professionals. The American Institute strives to provide for the interdisciplinary needs of professionals in today's rapidly expanding technological fields through the creation of two and three day seminars/workshops. These seminars/workshops are offered throughout the United States, Canada and Australia. For a current listing of sessions available, call the Registrar at 201-377-7400.

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MANAGING MICROCOMPUTER PROJECTS

TYPE OF REGISTRATION

- ☐ Single \$740
- ☐ Multiple (See discount schedule)

METHOD OF PAYMENT

- ☐ Check Enclosed
- ☐ Bill My Firm

CHOICE OF SESSION

- ☐ New Brunswick, July 7-8
- ☐ Las Vegas, July 20-21
- ☐ Chicago, August 3-4
- ☐ Houston, July 13-14
- ☐ Arlington, July 27-28
- ☐ New York City, August 10-11

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